

REMARKS

At the time of the fourth Official Office Action-Final Rejection, i.e. the last Office Action, claims 1, 3, 5-9, 11, 12, 18-20, 22-26, 28-29 and 31-39 were present in the application. Of those claims, claims 1 and 20 were independent claims.

In the last Office Action all of the claims were finally rejected as follows:

1. In Paragraph 1 of the Office Action claims 1, 3, 5-9, 11, 12, 18-20, 22-26, 28-29 and 31-39 were rejected as indefinite under 35 U.S.C. §112 on the ground that there is “no basis in the specification as originally filed, for the terms ‘substantially untreated’”;
2. In Paragraph 2 of the Office Action claims 1, 3, 5-9, 11-12, 18-20, 22-26, 28-29, 31-39 were rejected as indefinite under 35 U.S.C. §112 for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, because
 - a. “‘citrus feed supplement citrus particles’ lacks antecedent basis”;
 - b. “in the claims, ‘substantially untreated’ is indefinite, particularly when the specification does not define what this means. On the other hand, the specification show (*sic*) that the citrus byproduct was dried and flaked”; and
 - c. “the specification indicates that the citrus byproduct is dried citrus peel or pulp, and yet, citrus byproduct is listed with citrus peel or pulp (claim 1, lin 3-4 and 6). Therefore it is not clear what ‘citrus byproduct’ covers and what byproducts applicant intends to include by these terms.” [emphasis original]
3. In paragraph 3 of the Office Action, claims 1, 3, 5-9, 11-12, 14-26*, 28-29 and 31-39 were rejected as obvious under 35 U.S.C. §103(a) over the DEYOE et al. publication, in view of HENDERSON et al. (4,560,561) and further in view of more MOORE, Jr. (5,928,403); and

* Claims 14-17 and 21 had previously been cancelled.

4. In Paragraph 4 of the Office Action, claims 1, 3, 5-9, 11-12, 14-26*, 28-29 and 31-39 were rejected as obvious under 35 U.C.S. §103(a) over the BOUSHY et al. publication, the COLEMAN et al. publication, or the ELDRED et al. publication in view of HENDERSON et al. and further in view of MOORE Jr.

Each of the four above noted publications were previously cited by applicants in Information Disclosure Statements.

Applicants wish to thank Examiners Chhaya D. Sayala and Bob Madsen for the interview with applicants' undersigned counsel at the Patent and Trademark Office on January 26, 2006.

As discussed during the interview, the present invention is directed to the discovery that a balanced feed composition for poultry may be supplemented with a citrus feed supplement comprising particles of a substantially untreated citrus byproduct of dried citrus peel or pulp from citrus operations which generate citrus peel or pulp byproduct or waste during citrus juice extraction, and in an amount of not more than 1.5 weight percent of the citrus feed supplement based on the total weight of the poultry feed diet composition. Significantly, applicants have discovered that at weight percentages greater than 1.5 there may be a detrimental effect on the diet composition in at least some of the desired attributes, such as adjusted feed conversion and average bird weight as shown in FIG. 2, feed conversion as shown in FIG. 3, total mortality as shown in FIG. 4 and body weight and body weight gain as shown in FIG. 8. Moreover, undesirable fat on the poultry begins to rise at 0.8 weight percent as shown in FIG. 7. However, at supplementation levels of not greater than 1.5 weight percent, beneficial results for each of these attributes were observed. Indeed at levels of citrus feed supplement not greater than 1.5 weight percent, the benefits exceeded those obtained when simply feeding the poultry with the control balanced feed composition without the citrus feed supplement. Thus, the present invention not only has the benefit of finding a useful purpose for what otherwise would be waste that would necessitate costly disposal, but that such waste without the need for treatment may be employed while at the same time achieving beneficial results.

* Claims 14-17 and 21 had previously been cancelled.

Support for Language in Claims Describing the Citrus Feed Supplement

During an earlier interview of July 13, 2005 which preceded the January 26, 2006 interview, Examiner Sayala suggested that claims 1 and 20 be amended as set forth herein to specifically use language taken directly from the original specification to describe the citrus feed supplement. Accordingly, claims 1 and 20 were amended to call for "particles of a substantially untreated citrus byproduct of dried citrus peel or pulp from citrus operations which generate citrus peel or pulp byproduct or waste during citrus juice extraction" in place of the Markush group which was previously set forth in the claims. When so amending the claim language, applicants' specifically pointed out that the language finds clear support basis in Paragraphs 11, 42, 52 and 60 of the original specification.

The language that was amended into claims 1 and 20 to describe the citrus feed supplement was essentially taken verbatim from Paragraph 0011 of the original specification which states:

The invention provides a feed supplement for poultry which is citrus byproduct. The preferred citrus byproduct is dried citrus peel or pulp from citrus operations which generate citrus peel or pulp byproduct or waste during citrus juice extraction.

Paragraph 0042 of the original specification further states:

The feed supplement according to the invention is preferably one which is readily available and relatively inexpensive. It is a byproduct or waste from commercial citrus juice operations. One particular advantage of the present invention is the ability to avoid having to further treat this waste product (aside from a simple size-reduction step) before being able to realize its beneficial and valuable effects at low, supplement or additive levels in poultry feed diets.

And, Paragraph 0060 of the original specification states with respect to the Examples:

Each of Compositions 2 through 6 contained a specified level of comminuted citrus byproduct as received from a commercial orange juice extraction byproduct or waste flow treated to dried pulp and pelletized. This citrus byproduct is generally in accordance with Chapter 10 of Braddock, *Handbook of Citrus By-Products and Processing Technology*.

Thus, clear support appears in the original specification for the language which appears in claims 1 and 20 to describe what the citrus feed supplement is.

Support for “Substantially Untreated” Language in the Claims

In addition claims 1 and 20 set forth that citrus byproduct in the citrus feed supplement is “substantially untreated”. This language has been rejected under §112 in the last Office Action as having “no basis in the specification” (Paragraph 1 of the Office Action), and “as not being defined in the specification” (Paragraph 2 of the Office Action). It is respectfully submitted that “substantially untreated” is clearly supported and defined in the original specification.

In the first instance, Paragraph 0011 of the original specification states:

The present invention addresses these problems by providing a feed supplement source which is inexpensive, widely available and requires no separation of individual bioflavonoids or isolation of components useful as supplements.

Secondly, Paragraphs 0017 and 0018 of the original specification state:

[0017] Another object of the present invention is to provide a product and process in the poultry feed business where a supplement remains as intact particles of a naturally occurring byproduct composition.

[0018] Another object of embodiments of this invention is to provide improved product and process advances which use effective and inexpensive feed supplement material in its “native” state without requiring extraction, isolation or purification.

Thirdly, Paragraphs 0042 and 0043 of the original specification state:

[0042] The feed supplement according to the invention is preferably one which is readily available and relatively inexpensive. It is a byproduct or waste from commercial citrus juice operations. One particular advantage of the present invention is the ability to avoid having to further treat this waste product (aside from a simple size-reduction step) before being able to realize its beneficial and valuable effects at low, supplement or additive levels in poultry feed diets.

[0043] In an especially advantageous aspect of the invention, the citrus byproduct provides a naturally occurring combination or complex mixture of citrus byproducts. This naturally occurring combination need not be subjected to treatment beyond that currently conventionally practiced in

the citrus juice extraction industry. The only additional step of processing the traditional byproduct is grinding this commodity so as to facilitate its mixing into the poultry feed in a substantially uniform manner.

And, Paragraph 0050 of the original specification states:

For economic and positive environmental and organic reasons, the components can be used as is and without requiring extraction, purification or isolation of the individual chemicals. They can be provided in their native state and in the valuable combinations already present in dried citrus peel and/or pulp. When thus provided, the citrus byproduct avoids the use of chemical extraction agents such as organic solvents which might not be totally appropriate for use in a feed supplement. This provides a supplement which is heterogeneous in terms of components present within the supplement.

Thus the description in the original specification leaves no doubt that the citrus feed supplement is “substantially untreated” due to the express absence of any separation of individual bioflavanoids, isolation of components, extraction, purification or other processing techniques from their native state following citrus juice extraction with the possible exception of drying or size reduction which do not chemically alter the citrus byproduct.

Support for “Citrus Feed Supplement Citrus Particles” Language in Claims

As to the §112 rejection in Paragraph 2 of the Office Action that the language “citrus feed supplement citrus particles” lacks antecedent basis, applicants’ counsel was advised during the interview that the subject language to which this rejection was directed appears in claim 9. Claim 9 depends from claim 1 and claim 1 contains the language:

A poultry feed diet composition for poultry, the poultry feed diet composition comprising a balanced feed composition plus a **citrus feed supplement, said feed supplement** being **particles** of a substantially untreated **citrus** byproduct of dried citrus peel or pulp from citrus operations which generate citrus peel or pulp byproduct or waste during citrus juice extraction....(emphasis added)

It is respectfully submitted that this language in claim 1 provides clear antecedent basis for the “citrus feed supplement citrus particles” language appearing in claim 9.

In any event claim 9, as well as claims 8, 25 and 26 which contain similar language, have been amended herein in a manner which should clearly obviate the antecedent basis rejection, although it is not believed that such amendment is needed. This amendment, which is the only amendment presented herein to the finally rejected claims, should not raise any new issues that would require further consideration and/or search, should not raise any issue of new matter, should place the application in better form for appeal by reducing or simplifying the issues for appeal, and do not present any additional claims without canceling a corresponding number of finally rejected claims.

Accordingly, the amendment of claims 8, 9, 25 and 26 as set forth herein should be entered pursuant to 37 C.F.R. §1.116 and MPEP §§714.12 and 714.13.

It Is Perfectly Clear What Citrus Byproducts Are Included in the Claims

A §112 rejection also stated in Paragraph 2 of the last Office Action was that “the specification indicates that the citrus byproduct is dried citrus peel or pulp, and yet, citrus byproduct is listed with citrus peel or pulp (claim 1 lin 3-4 and 6). Therefore, it is not clear what ‘citrus byproduct’ covers and what byproducts applicant intends to include by these terms.” [emphasis original] It is respectfully submitted that the byproducts applicant intends to include in claims 1 and 20 is perfectly clear.

As discussed during the interview, claims 1 and 20 **do not** set forth that the citrus byproduct is listed **with** citrus peel or pulp as stated in Paragraph 2 of the last Office Action. Both claims set forth a “citrus byproduct **of** dried citrus peel or pulp” not **with** dried citrus peel or pulp. The term “**of**” says what the citrus byproduct **is** as set forth in the specification, not what it simply might include as “**of**” might suggest as concluded by the Examiner in the last Office Action.

The Feed Supplement May Be “Limed”

Although not raised in the last Office Action, during the January 26, 2006 interview the Examiner inquired as to the support in the specification for claims 11 and 28 which claim that the citrus byproduct of the citrus feed supplement is a “limed byproduct”.

Paragraph 0047 of the original specification clearly establishes that the processing of the otherwise substantially untreated citrus byproduct of citrus extraction

typically includes a so-called liming process in which the raw, wet citrus residue is treated with calcium oxide ("quicklime"), pressed and dried into loose dried pulp. This can serve as the dried citrus byproduct as used herein. Details on the production of this loose dried pulp can be found in Braddock, *Handbook of Citrus By-Products and Processing Technology*, Chapter 10, "Dried Pulp, Pellets and Molasses," pages 135-148, incorporated by reference hereto.

It is such additional liming of the otherwise substantially untreated citrus byproduct of claims 1 and 20 which is claimed in claims 11 and 28.

The Rejections On Prior Art

DEYOE et al. discloses a feed supplement which comprises citrus bioflavonoids at levels of $\frac{1}{2}$ percent, 1 percent, $1\frac{1}{2}$ percent, $2\frac{1}{2}$ percent and 5 percent. DEYOE et al. states that levels of bioflavonoids at 1, $1\frac{1}{2}$, $2\frac{1}{2}$ weight percent are acceptable, but that higher levels are detrimental. DEYOE et al. however, fails to disclose or suggest a feed supplement which comprises "particles of a substantially untreated citrus byproduct of dried citrus peel or pulp from citrus operations which generate citrus peel or pulp byproduct or waste during citrus juice extraction" as expressly set forth in claims 1 and 20. Indeed, the feed supplement in DEYEO et al. is a single purified, concentrated component which has probably been extracted from such waste, and is not the substantially untreated waste itself as set forth in claims 1 and 20. If the bioflavonoid weight percentages of DEYEO et al. are to be supplied by providing untreated citrus peel and pulp in the highly diluted form as in the present claimed invention, it would be necessary to provide weight percentages of peel or pulp greatly in excess of the "not greater than 1.5 weight percent" as set forth in the claims in order to satisfy the bioflavanoid levels specified by DEYEO et al. As set forth in applicants' amendment mailed July 15, 2004, in order to achieve even the minimum 0.5 weight percent bioflavonoids as disclosed by DEYOE et al., the following levels of citrus peel would be needed: navel orange – 12.8 weight percent; Valencia orange – 19.2 weight percent; grapefruit – 20+ weight percent; tangerine – 79 weight percent; and lemon – 38 weight percent.

As indicated during the January 26, 2006 interview, the rejection on DEYOE et al. should be overcome by claims 1 and 20 because they recite only citrus byproducts in their substantially untreated native state and at very low levels of "not more than 1.5 weight percent". Under such conditions, any bioflavanoids which may be present are highly diluted and at much lower weight percentages than the 1-2½ weight percents disclosed by DEYOE et al.

BOUSHY et al. discloses tests involving the feeding of citrus pulp to poultry at levels of 2.5 – 12.5 weight percent. At page 222 BOUSHY et al. concludes:

The researchers concluded that dried citrus pulp was a reasonable feedstuff for broilers **at an inclusion level of 7.5% of the diet.** (emphasis added)

The minimum test level of 2.5 wt.% and the desired inclusion level of 7.5 wt% are both significantly greater than the "not more than 1.5 weight percent" of the present claimed invention.

COLEMAN et al. at most suggests that some other publication cited on page 272 as "Damron" found that 7.5 weight percent or less citrus sludge was acceptable when fed to poultry. COLEMEN et al. did not actually conduct any tests with poultry. Instead, COLEMAN et al. simply analyzed the levels of amino acids and proteins in aerobic and anaerobic citrus sludge and confirmed that those levels might be in an acceptable range. However, COLEMAN et al. contains no disclosure or suggestion that citrus sludge "of not more than 1.5 weight percent" might be employed. Moreover, aerobic and anaerobic citrus sludge is "not substantially untreated citrus byproduct of dried citrus peel or pulp from citrus operations which generates citrus peel or pulp byproduct or waste during citrus juice extraction" as set forth in the claims. Aerobic and anaerobic citrus sludge results from the decomposition of such peel or pulp and is, therefore, a material which has undergone substantial treatment and is quite different than the undecomposed substantially untreated waste as in the present claimed invention.

The ELDRED et al. publication is probably the same "Damron" article referred to in COLEMEN et al. ELDRED et al. discloses the addition of 2.5-20 weight percent again of citrus sludge to poultry feed and concluded that 5-10 weight percent was acceptable. ELDRED et al. contains no disclosure of the "not more than 1.5 weight

percent" set forth in the present claims, and like COLEMEN et al., the supplement is citrus sludge and not the substantially untreated citrus byproduct of peel or pulp as in the present claimed invention.

And neither of the secondary references overcomes the critical failures of the four last discussed publications.

HENDERSON et al. simply discloses the use of citrus molasses from sugar refining processes in pellet form for improving poultry eggshells as opposed to the poultry meat product to which the supplements of the present invention are directed. Thus, HENDERSON et al. neither discloses nor suggests the use of citrus peel or pulp as a supplement as in the present invention nor is HENDERSON et al. directed to the solution of the same problem as in the present invention.

MOORE, Jr. isn't even directed to a feed supplement as in the present invention. MOORE, Jr. simply treats poultry manure with alum to inhibit ammonia which has an adverse affect on poultry.

Accordingly, of all of the prior art which has been relied upon to reject the claims only BOUSHY et al. addresses a citrus feed supplement which might conceivably be comprised of "particles of a substantially untreated citrus byproduct of dried citrus peel or pulp from citrus operations which generate citrus peel or pulp byproduct or waste during citrus juice extraction" as set forth in all of the claims. All of the other prior art address other treated citrus materials which have been subjected to considerable treatment.

And, neither BOUSHY et al. nor any of the other prior art even when combined results in a substantially untreated citrus byproduct feed supplement which is present "at a concentration of not more than 1.5 weight percent, based on the total weight of the poultry feed diet composition" also as set forth in all of the claims. Indeed, BOUSHY et al. does not even test a feed in which the citrus byproduct feed supplement was "not more than 1.5 weight percent" as claimed. The lowest weight percent of such supplement tested by BOUSHY et al. was 2.5 weight percent. Even then BOUSHY et al. states no conclusion as to such 2.5 weight percent. The only conclusion BOUSHY et al. reaches was that "at 7.5%" the citrus pulp was a "reasonable feedstuff" (BOUSHY et al. page

222). No other weight percentage, much less "not more than 1.5 weight percent" as claimed, was stated by BOUSHY et al. to a "reasonable feedstuff".

For the above reasons it is respectfully submitted that all of the claims in the present application, claims 1, 3, 5-9, 11, 12, 18-20, 22-26, 28-29 and 31-39, are in condition for allowance. Accordingly, favorable reconsideration and allowance are requested.

Respectfully submitted,

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